

***NATIONAL WEATHER SERVICE INSTRUCTION 10-514
NOVEMBER 6, 2003***

***Operations and Services
Public Weather Services, NWSPD 10-5***

NATIONAL WINTER WEATHER PRODUCTS SPECIFICATION

NOTICE: This publication is available at: <http://www.nws.noaa.gov/directives/>.

OPR: OS22 (M. Tew)

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SUMMARY OF REVISIONS: This instruction supercedes NWSI 10-514, “National Winter Weather Products Specification,” dated January 27, 2003. This Directive changes the issuance time of the Day 1 and Day 2 Probabilistic Winter Weather Heavy Snow and Icing Forecast discussion and accompanying graphics. The sample text and graphics have been updated in Section 2 and Section 3 respectively.

_____ signed	_____ 10/23/03
Gregory A. Mandt Director, Office of Climate, Water, and Weather Services	Date

National Winter Weather Products Specification

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1. **Introduction.** This procedural directive describes the winter weather products issued by the Hydrometeorological Prediction Center (HPC) for the contiguous United States (CONUS), guidelines associated with these products, detailed content and format for each product type.

2. **Heavy Snow and Icing Discussion (product category QPFHSD).**

2.1 **Mission Connection.** HPC issues a heavy snow and icing discussion that provides the meteorological reasoning for the 12-hr and 24-hr day 2 probabilistic heavy snow and icing guidance graphic. This text message is used by NWS field offices and the general meteorological community (private sector and the media) including the aviation community. The product also supports the CONUS NWS public and aviation weather programs.

2.2 **Issuance Guidelines.**

2.2.1 **Creation Software.** HPC uses a Word Perfect text editor to issue the QPFHSD.

2.2.2 **Issuance Criteria.** The QPFHSD is a routine, schedule-driven product.

2.2.3 **Issuance Time.** See Table 1 below.

2.2.4 **Valid Time.** See Table 1 below.

<i>HPC Probabilistic Heavy Snow and Icing Discussion</i>				
<i>Issuance Time (UTC)</i>	<i>Valid Time (UTC)</i>	<i>AWIPS ID</i>	<i>WMO Header</i>	<i>Product Description</i>
300	0600 -1800 1800 - 0600	QPFHSD	FOUS11 KWBC	Text providing meteorological reasoning for 12-hour probabilities of hvy snow and icing graphic
900	1200 -0000 0000 -1200 1200 -1200 Day 2	QPFHSD	FOUS11 KWBC	Text providing meteorological reasoning for 12-hour and day 2 probabilities of hvy snow and icing graphic
1500	0600 - 1800 1800 - 0600	QPFHSD	FOUS11 KWBC	Text providing meteorological reasoning for 12-hour probabilities of hvy snow and icing graphic
2100	0000 - 1200 1200 - 0000 0000 -0000 Day 2	QPFHSD	FOUS11 KWBC	Text providing meteorological reasoning for 12-hour and day 2 probabilities of hvy snow and icing graphic

Table 1. Product schedule and valid times for heavy snow and icing discussion.

2.2.5 **Product Expiration Time.** Product expires after valid time.

2.3 Technical Description. The HSD follows the format and content described in this section.

2.3.1 Universal Geographic Code Type. Not applicable.

2.3.2 Mass News Disseminator Broadcast Instruction Line. Not applicable.

2.3.3 Mass News Disseminator Product Type Line. The QPFHSD header is Probabilistic Heavy Snow and Icing Discussion.

2.3.4 Content. HPC issues a heavy snow and icing discussion that provides the meteorological reasoning for the 12-hr and 24-hr day 2 probabilistic heavy snow and icing guidance graphic.

2.3.5 Format.

FOUS11 KWBC 152024
QPFHSD

PROBABILISTIC HEAVY SNOW AND ICING DISCUSSION
NWS HYDROMETEOROLOGICAL PREDICTION CENTER CAMP SPRINGS MD
324 PM EST SAT FEB 15 2003

12HR HEAVY SNOW AND ICING FCST VT FEB 16/0000 UTC THRU FEB 16/1200 UTC
REFERENCE AWIPS GRAPHICS UNDER...HEAVY SNOW FCST

CNTRL IL/NORTHEAST MO...

AREAS OF SNOW ARE EXPECTED TO CONTINUE IN THE VICINITY OF THE CLOSED 700 MB LOW (SEVERAL LOCATIONS ALREADY REPORTING MDT TO HEAVY SNOW IN CENTRAL IL) DRIFTING EAST ACRS THE THREAT RGN...WITH 30-35 KT EAST INFLOW AT 850 MB FCST BY THE GFS AS 850 MB TEMPS COOL TO -3 TO -6C. THE GFS AND ETA DISAGREE ON THE LOCATION OF THE .25-.50"+ AREA OF LIQUID EQUIVALENT PRECIP...WITH THE ETA OVER WEST CENTRAL IL AND THE GFS OVER EAST CENTRAL IL. A LOW RISK IS INDICATED NOW THAT THE AMTS HAVE TRENDED DOWN FROM PREVIOUS PERIODS...AND THE LOW THREAT WAS EXTENDED INTO IN DUE TO BOTH RADAR RENDS AND ALSO THE FAVORED TRACK TO THE LEFT OF THE CLOSED 850 MB LOW MOVG ACRS S IL AND KY.

OH/KY BORDER/SOUTH WV/INTERIOR VA/NC...

THE 12 UTC ETA/GFS CONT TO SHOW A NARROW BAND OF ICING POTENTIAL ALONG THE KY BORDER WITH OH AND WV...CONTINUING INTO THE AREA OF COLD AIR DAMMING EAST OF THE APPALACHIANS IN WEST NC. A LOW THREAT IS SHOWN AS THE AREA OF TRANSITION FROM RAIN TO FREEZING RAIN TO SLEET MOVES SOUTH DURING THE PD...MAKING IT HARD TO IDENTIFY WHERE AN EXTENDED PD OF JUST FREEZING RAIN WOULD OCCUR. ADDITIONALLY...THE ETA LIQUID EQUIVALENT IS QPF IS UNDER A QUARTER INCH IN PARTS OF WEST CENTRAL NC.

OH/WV/VA/MD SNOW...

AS SFC HIGH PRESSURE IN ONTARIO MVS OVER INTO QUEBEC...COLD AIR WILL MV SOUTHWARD ACRS THE RGN...CHANGING RAIN AND MIXED FREEZING RAIN/SLEET TO SNOW ACRS INTERIOR SOUTH VA. LOW LVL EAST TO SOUTHEAST FLOW WL PROVIDE ENHANCED UPSLOPE FLOW INTO THE MNTNS OF VA/WV. A HIGH RISK FOR FOUR INCH SNOW WAS PLACED ALG THE BORDER OF WV/VA...EXTENDING EAST INTO CENTRAL VA...WHERE BOTH THE ETA AND GFS FCST HALF TO ONE INCH LIQUID EQUIVALENT AND

THERMAL PROFILES SHOW THE ENTIRE COLUMN BELOW FREEZING FOR THE WHOLE PD. FURTHER NORTH...THE LOW RISK ACRS NORTHERN VA/ADJ MD ACCOUNTS FOR THE GFS LOCATING HIGHER AMTS OVER A QUARTER INCH LIQUID EQUIVALENT FURTHER NORTH THAN THE ETA MODEL. THE CANADIAN/UKMET MODELS HAVE QUARTER INCH AMTS INTO N VA NEAR WASHINGTON DC.

FURTHER SOUTH...THE LOW RISK ACCOUNTS FOR THE LIMITED DURATION OF SNOW IN SOUTHERN VA...AS THE GFS FCST SOUNDINGS INDICATE A LYR ABT A 100 MB DEEP ABV FREEZING (725-825 MB) IN SOUTHERN VA...SUPPORTING A SIGNIFICANT AREA OF SLEET BETWEEN THE SNOW TO THE NORTH AND FREEZING RAIN TO THE SOUTH.

CA...

A MDT RISK WAS PLACED IN THE HIGHER ELEVS OF CA NORTHERN SIERRA/SHASTA/SISKIYOU. THIS IS SUPPORTED BY THE ETA AND GFS BOTH FORECASTING LIQUID EQUIVALENT AMTNS FROM AN INCH TO AN INCH AND A QUARTER...WITH THE UKMET AND CANADIAN FCSTG CONTINUOUS AREAS OF HALF TO ONE INCH. A DP LYR SHRTWV APPROACHES THE CA COAST AND THE 500 MB JET INCREASES TO 50 KTS...AND THE ETA/GFS FCST 700 MB VV MAXIMA OF 9-13 MICROBARS/SEC ACRS THE RGN...WITH DP LYR RH OVER 90 PERCENT MOST OF THIS PD. ETA AND UKMET SOUNDINGS SHOW WET BULB ZERO LEVELS DROPPING BELOW 6000 FT AND EVEN 5000 FT AT THE END OF THE PD.

12HR HEAVY SNOW AND ICING FCST VT FEB 16/1200 UTC THRU FEB 17/0000 UTC
REFERENCE AWIPS GRAPHICS UNDER...HEAVY SNOW FCST

UPSTATE SC/WRN NC/SOUTHWEST VA...

THE STRONG 1040+ MB HIGH PRESSURE MOVG EAST ACRS QUEBEC TO THE NY BORDER CONTINUES TO FUNNEL SUB FREEZING AIR EAST OF THE APPALACHIANS AS THE CLASSIC COLD AIR DAMMING EVENT CONTINUES. THE MDT RISK AREA IN WEST NC IS WHERE THERE IS GOOD OVERLAP IN THE ETA/GFS AND UKMET MODEL THERMAL PROFILES SHOWING AN ABV FREEZING LYR ALOFT WITH CONTINUED BELOW FREEZING BNDRY LYR TEMPS. THE GFS FCSTS A QUARTER TO HALF AN INCH LIQUID EQUIVALENT THIS PD...WITH THE ETA A HALF TO THREE QUARTERS OF AN INCH. NORTH OF THE MDT RISK...THE DEEPER COLD AIR TWRDS THE VA BORDER SUPPORTS SLEET...SO THE MIXTURE OF PRECIP TYPES SUPPORTS A LOW RISK.

WV/VA/MD...

A HIGH RISK FOR FOUR INCH SNOWS WAS PLACED ACRS CENTRAL-NORTHERN VA TO THE VA BORDER AS THE GFS AND ETA FCST HALF AN INCH TO AN INCH LIQUID EQUIVALENT WHILE THERMAL PROFILES REMAIN BELOW FREEZING. BOTH THE GFS AND ETA FCST PERSISTENT 8-12 MICROBARS/SEC 700 MB VV THROUGH THE PD IN THE HIGH RISK AREA. A MDT RISK WAS PLACED FURTHER SOUTH IN VA AS A RIBBON OF WARMER AIR CENTERED ON 700 MB MIGHT BE DEEP ENOUGH TO MIX IN SLEET. A CLUSTER OF SEVERAL 12Z GFS ENSEMBLES SHOW THE 850 MB ZERO DEGREE ISOTHERM FURTHER NORTH INTO NORTHERN VA AT 00Z VS THE OPERATIONAL MODEL IN SOUTHERN VA.

A LOW RISK WAS PLACED FURTHER NORTH INTO SOUTHERN PA AS THE GFS MOVES AMTS OVER A QUARTER INCH LIQUID EQUIVALENT NORTH A LITTLE FASTER THAN THE ETA/CANADIAN/GFS.

SOUTHERN IN/SRN OH/NORTH KY....

A LOW PROBABILITY OF 4"+ SNOWS WAS PLACED IN THE COMMA HEAD/DEFORMATION AREA AS THE 700 MB LOW APPROACHES THE RGN... TO THE LEFT OF THE 850 MB TRACK ACROSS SOUTHERN KY. THE ETA/GFS LIQUID EQUIVALENT AMNTS ARE A QUARTER TO LOCALLY HALF AN INCH... SUPPORTED BY 700 MB VV MAXIMA OF 3-6 MICROBARS/SEC. THE CANADIAN MODEL PROVIDES SUFFICIENT WARMING FOR SLEET TO MIX IN...WHILE THE UKMET FCSTS AMTS UNDER A QUARTER INCH LIQUID EQUIVALENT.

SIERRA...

THE ONGOING SNOW EVENT IS EXPECTED TO END THIS PD AS THE HEIGHT FALLS AND VV MAXIMA IN THE GFS/UKMET/CANADIAN MODEL MOVE FURTHER INLAND. ONLY THE ETA HAS A RESIDUAL HALF TO THREE QUARTERS OF AN INCH AS THE 700 MB VV MAXIMA MOVES INLAND MORE SLOWLY THAN THE OTHER MODELS...BUT DEPARTS THE RGN NEAR 18Z.

ID...

A LOW RISK FOR 12 INCH SNOWS WAS PLACED ACROSS THE SALMON RIVER MNTS...WHERE THE ETA FCSTS A QUARTER TO LOCALLY FOUR TENTHS OF AN INCH LIQUID EQUIVALENT AMNTS AND THE GFS FCSTS LARGER AREAS OF HALF TO THREE QUARTERS OF AN INCH. BOTH MODELS INCREASE DEEP LWR RH TO 90 PERCENT AND DEEP SOUTHWEST FLOW WITH THE 700 MB WINDS PEAKING NR 40 KTS AS A SHORTWV PASSES THROUGH.

DAY2 HEAVY SNOW AND ICING FCST VT FEB 17/0000 UTC THRU FEB 18/0000 UTC
REFERENCE AWIPS GRAPHICS UNDER...HEAVY SNOW FCST

MID ATLC/NORTHEAST...

THE ETA/GFS/CANADIAN MODELS ARE WELL CLUSTERED IN THEIR QPF AMNTS WITH LIQUID EQUIVALENTS OVER AN INCH ACROSS SOUTH CENTRAL PA...AND THE ETA/CANADIAN EXTENDING THIS AREA ACROSS THE REST OF SOUTHEAST PA/NJ. THE BIGGEST CHALLENGE IS TO DETERMINE PRECIP TYPE AS THE GFS AND ETA WARM THE BNDRY LWR ABV FREEZING ALG COASTAL AREAS FROM THE DELMARVA NORTH ACROSS NJ. FURTHER INLAND...THE UKMET MODEL FCSTS THE 700 MB ZERO DEGREE ISOTHERM (CANADIAN AT 850 MB) TO CROSS MD INTO SOUTHEAST PA...SUGGESTING A PD OF SLEET ACROSS THE RGN. THE 12Z GFS ENSEMBLES HAVE A CLUSTER OF FIVE MEMBERS BRINGING THE ZERO DEGREE ISOTHERM AT 850 MB INTO SOUTHEAST PA AT 48 HRS...NORTH OF THE OPERATIONAL RUN...WHICH IS ALONG A LINE FM RICHMOND TO ATLANTIC CITY.

SOUTHEAST VA/CENTRAL NC...

THE ETA AND GFS FCST THE PF OF FREEZING PRECIP TO EXTEND INTO THE FIRST SIX HOURS OF THE PD AND END AS THE PRECIPITATION EVENT SUBSIDES AND MOVES FURTHER NORTH UP THE COAST. A LOW RISK IS INDICATED AS BOTH MODEL DECREASE THE AREA OF SUB-FREEZING SFC CONDS WITH WARMER AIR ALOFT PLUS THE SHORT DURATION.

PETERSEN

GRAPHICS AVAILABLE ON THE WEB AT WWW.HPC.NCEP.NOAA.GOV

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2.4 Updates, Amendments, and Corrections. Products are not updated or amended. Corrections are issued as necessary.

3. Probabilistic Heavy Snow and Icing Forecasts (product categories 93S, 94S, 98S).

3.1 Mission Connection. HPC issues probabilistic heavy snow and icing guidance products to support the NWS winter weather watch/warning program. These products are issued in probabilistic form to better represent the forecast uncertainty associated with a particular event. The products also support the CONUS NWS public and aviation weather programs.

3.2 Issuance Guidelines.

3.2.1 Creation Software. HPC uses the National Centers N-AWIPS software to generate these products.

3.2.2 Issuance Criteria. These are routine, schedule-driven products.

3.2.3 Issuance Time. Refer to Table 2.

3.2.4 Valid Time. Refer to Table 2.

<i>HPC Probabilistic Heavy Snow and Icing Graphical Guidance Product Schedule</i>				
<i>Issuance Time (UTC)</i>	<i>Valid Time (UTC)</i>	<i>AWIPS ID</i>	<i>WMO Header</i>	<i>Product Description</i>
0215	0600 -1800 1800 - 0600	RBG93S RBG94S	PSID41 KWBC PSID88 KWNH	12-hour probabilities of hvy snow and icing exceeding predetermined thresholds
0815	1200 -0000 0000 -1200	RBG93S RBG94S	PSID41 KWBC PSID88 KWNH	12-hour probabilities of hvy snow and icing exceeding predetermined thresholds
0815	1200 -1200 Day 2	RBG98S	PGII98 KWNH	24-hour probabilities of hvy snow and icing exceeding predetermined thresholds
1415	1800 - 0600 0600 - 1800	RBG93S RBG94S	PSID41 KWBC PSID88 KWNH	12-hour probabilities of hvy snow and icing exceeding predetermined thresholds
2015	0000 -1200 1200 - 0000	RBG93S RBG94S	PSID41 KWBC PSID88 KWNH	12-hour probabilities of hvy snow and icing exceeding predetermined thresholds
2015	0000 -0000 Day 2	RBG98S	PGII98 KWNH	24-hour probabilities of hvy snow and icing exceeding predetermined thresholds

Table 2. Probabilistic Heavy Snow and Icing Chart Issuance and Valid Times

3.2.5 Product Expiration Time. Product expires after valid time.

3.3 Technical Description. Charts should follow the format and content described in this section.

3.3.1 Universal Geographic Code Type. Not applicable.

3.3.2 MND Broadcast Line. Not applicable.

3.3.3 MND Header. Not applicable.

3.3.4 Content. A graphical product that depicts the probabilities of snow (solid lines) and /or ice (dashed lines) exceeding predetermined threshold values that vary depending on location within the CONUS.

- a. The SOLID LINES indicate the forecaster confidence (low, moderate and high) that a location within the area will receive greater than or equal to a determined threshold of snowfall, based on the region:

Sector Threshold Regions	12-hr forecast (inches)	Day 2 Forecast (inches)
Western Region	12	18
Standard	4	6
Southeast	2	4

Table 3. Sector Snow Thresholds.

- b. The DASHED LINES indicate the forecaster confidence (low, moderate and high) that a location within the area will receive greater than or equal to one quarter-inch (0.25") of ice accumulation.
- c. The forecaster confidence thresholds are:
- (1) LOW - 20% to 30% chance of occurrence
 - (2) MODERATE (MDT) - 30% to 70% chance of occurrence
 - (3) HIGH - 70% or greater chance of occurrence

3.3.5 Format Examples. Examples of 93S, 94S, 98S respectively.

3.3.5.1 93S Example.

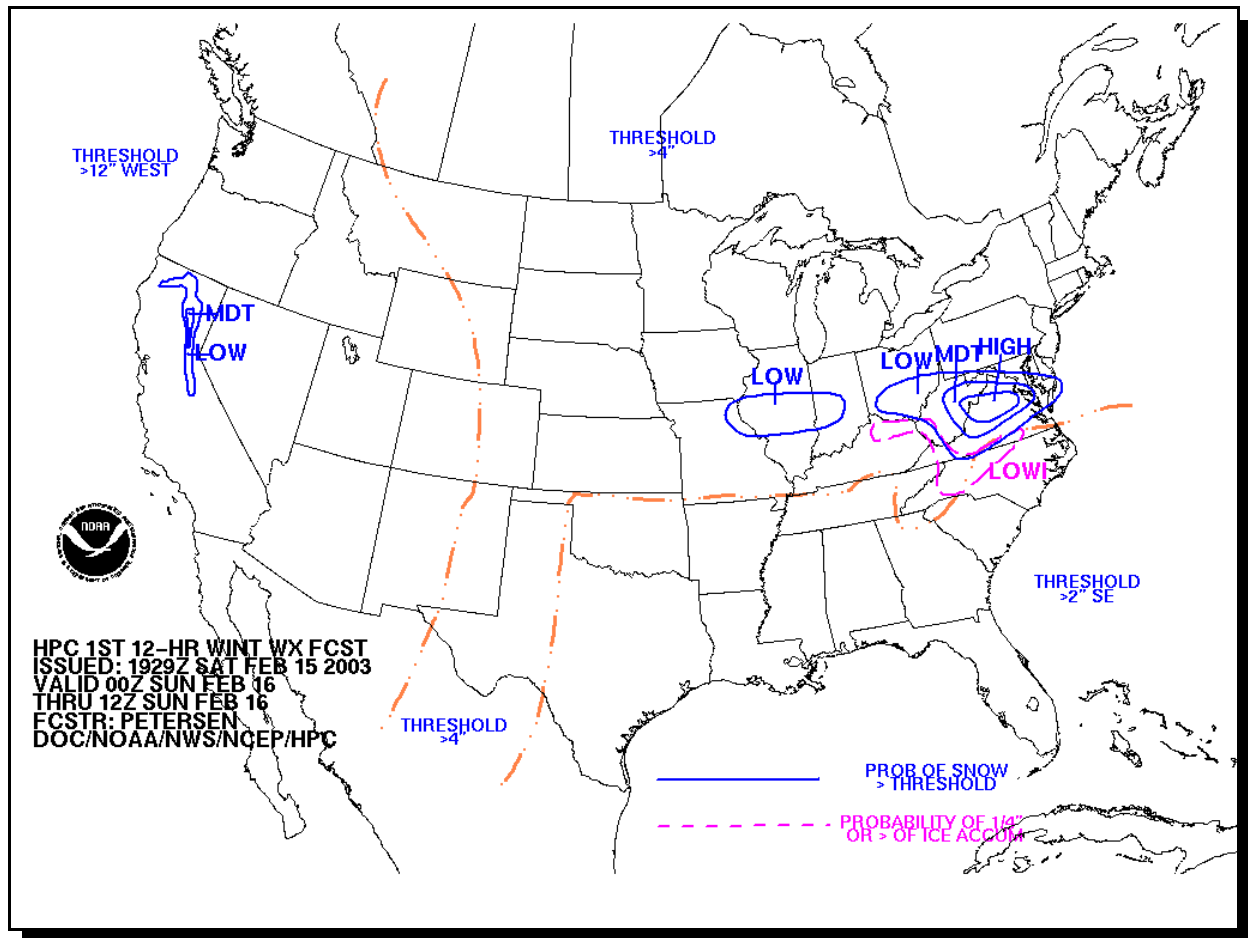


Figure 1. 93S - Graphical Probabilistic Heavy Snow and Icing Product.

3.3.5.3 98S Example.

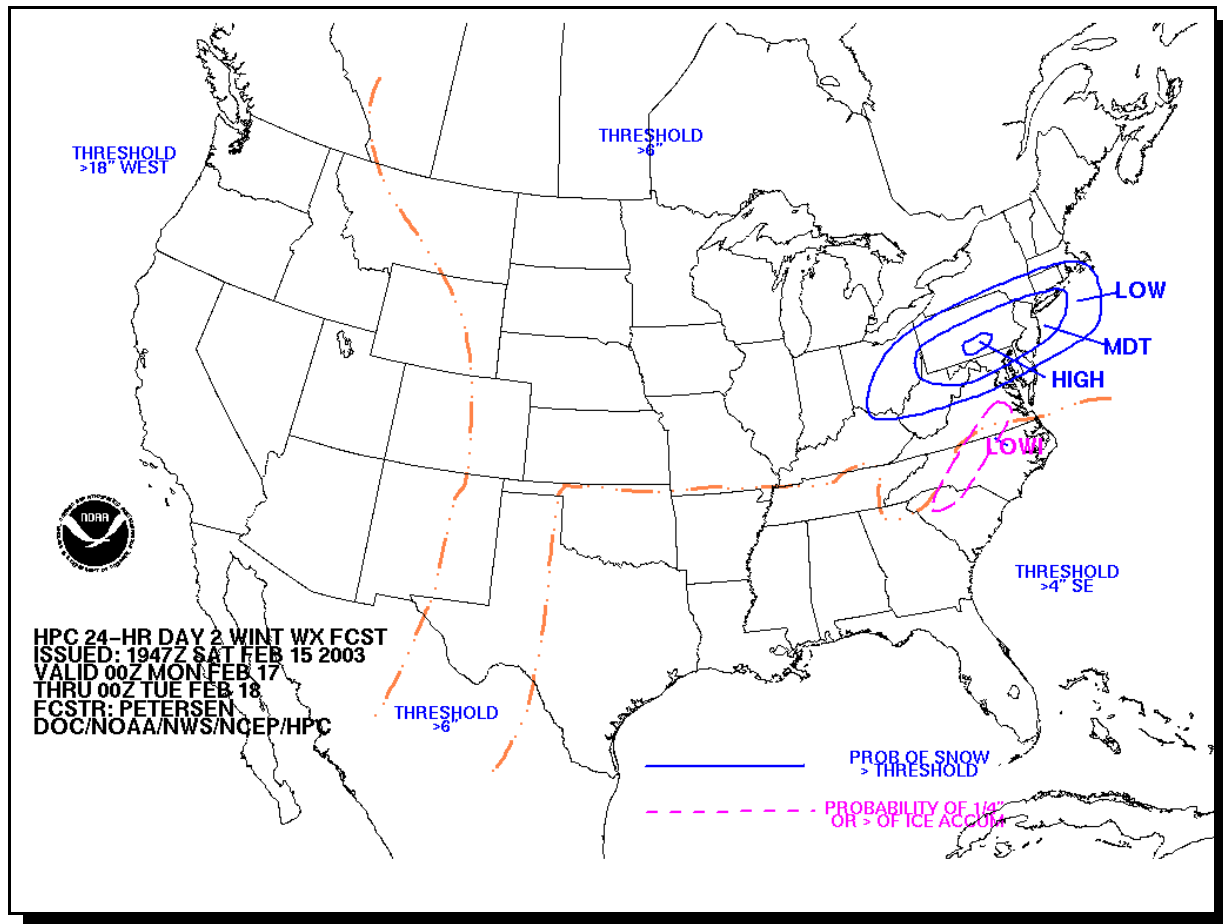


Figure 3. 98S - Graphical Day 2 Probabilistic Heavy Snow and Icing Product.

3.4 Updates, Amendments, and Corrections. HPC will correct for format and grammatical errors as required.